International Journal of Engineering Business Management

OPEN ACCESS ARTICLE

How to Increase the Value of the Project Management Maturity Model as a Business-oriented Framework

Regular Paper

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Received 31 Jul 2013; Accepted 17 Jan 2014

DOI: 10.5772/58292

Abstract An organization's effectiveness partly depends on the success of its projects. With this in mind, many efforts have been spent in recent decades to enhance the project management culture, but results are still highly unsatisfactory. Project Management Maturity Models (PMMMs) are seen by both the academic and the industrial communities as a solid instrument to achieve this goal. The point at issue is that surveys and researches show PMMMs must be better linked to business and financial performance. The aim of this paper is to explore the scope for improvement to evolve PMMMs as business-oriented frameworks.

Keywords Project Management, Maturity Model, Organizational Project Management

1. Introduction

As projects have been recognized as critical to the success of any organization, more and more organizations have embraced Project Management as an improvement tool as well as a key strategy for remaining competitive in today's highly competitive business environment [1].

Many researchers and practitioners have simultaneously begun to study the matter in a wide variety of directions in order to enhance methods and practices and to improve effectiveness in achieving the success of an organization's projects.

Despite all the efforts, in 2013 the Project Management Institute presented its periodical Pulse of the Profession™ research [2] which, even according to other studies [3], showed that less than two-thirds of projects meet their goals and business intent (success rates have been falling since 2008, from 72 percent in 2008 to 62 percent in 2012) and about 17 percent fail outright.

According to the PMI [2], in addition, the actual risk for organizations is estimated to amount to losses of an average of US$135 million dollars for every US$1 billion invested in a project.

Data and studies show clearly that much work remains to be done in the area of PM and that we are now only at the first stage: the imperative to improve project management for competitive advantage is clear, but barriers to an effective implementation still exist.

The approach chosen by the community to deal with the matter is to extend the focus of project management from studying a single project to studying the way the organization is using projects to achieve its goals [4]. PM is no longer a program within the company. It becomes a strategic part of the long-term business plan. The present view of PM recognizes - as a benefit - that it is now seen as a strategic initiative designed to enhance shareholder value.

Many authors [5, 6] suggest that Project Management Maturity Models (PMMMs) could be an answer or a support to link projects with strategy and organization. Others [5] show that PMMMs are typically used reactively and not proactively and that they do not have sufficiently rigorous protocols in the evaluation of project management maturity. Moreover there is too little empirical evidence to match project maturity and project performance.

The general aim of this study is to investigate the best way to fill the gap between PM and effective success in an organization's projects. It is a position paper in which the underlying assumption is that a PMMM represents a solid answer to an organization's needs and the research question is about the direction PMMMs should evolve to perform better in supporting an organization to achieve its business goals. The authors present arguments and evidence from the academic as well as the industrial perspective to back up propositions about the best way to increase the value of PMMMs as a business-oriented framework.

The paper is structured as follows: section 2 is devoted to comparing PMMMs and to analysing core features of the Organizational Project Management Maturity Model (OPM3) as best performer. In section 3, our propositions about OPM3 are presented and discussed. Section 4 summarizes main findings and introduces the future research work. Finally, section 5 provides some final remarks.

2. The Project Management Maturity Model (PMMM)

The Project Management Maturity Model (PMMM) is a formal tool used to assess, measure and compare an organization's own practices against best practices or those employed by competitors, with the intention to map out a structured path to improvement [3].

In order to adopt the project-based way of conducting business, organizations require the necessary infrastructure, which includes processes (methods and techniques), governance structures, competences of people and tools. Frequently, a lack of foresight creates an environment where the PM systems and infrastructure are not in place to support the needs of the practicing PM community. This is often where the value of a maturity assessment comes into play [7].

More generally, the use of a PMMM provides three main advantages:

1. A PMMM provides a normative description of good practices. That is, the maturity levels set an ideal standard that organizations can strive for [8].
2. A PMMM is a discussion tool for engaging interviewees and enabling reflection on the current status of an organization [9]. The resulting identification of strengths and weaknesses provides a logical path for progressive development and a strategic plan for advancing project management improvement within the organization [7].
3. A PMMM can be used to benchmark (parts of) organizations [10, 11].

Judgev and Thomas [9], however, note that the benefits of PMMMs should not be overestimated because they provide only temporary competitive advantage to the firms using them.

In any case, since the Capability Maturity Model Integration (CMMI) was first created in 1989, many other maturity models have been developed. We can now enumerate more than twenty PMMMs, which are substantially different from each other in terms of structure and features.

We have, therefore, explored some studies in order to compare different models. Grant [3] identified the following criteria for the evaluation: *(i)* degree of alignment with the methodology, *(ii)* scope, *(iii)* degree of publication, *(iv)* degree of independence from industry, *(v)* transparency of calculation, *(vi)* independence of the tools used, *(vii)* number of years of existence and *(viii)* ease of use. In a more concise way, the evaluation of maturity models for PMMMs could be developed along three dimensions [12]: *(i)* structure, *(ii)* applicability and *(iii)* usage.

Combining both frameworks, we have selected the following shortlist of maturity models:

1. Organizational Project Management Maturity Model (OPM3).
2. Capability Maturity Model Integration (CMMI-DEV).
3. Kerzner Project Management Maturity Model (PMMM).

4. Project, Program, Portfolio Management Maturity Model (P3M3).
5. Maturity Increments IN Controlled Environments (MINCE2).

However, we have limited the final choice to the only models - OPM3 and P3M3 - that better fit the basic assumption for our research.

Basic assumption: in order to achieve the expected benefits, a maturity model for a project-based organization should always cover three domains: project, program and portfolio.

In our opinion, it is completely wrong to try to achieve success by working only from a point of view of projects. Portfolio management is central to many organizations' strategic processes and requires consideration of multiple factors and the ability to envision alternative future consequences to support strategic project portfolio decision-making. However, programs and projects are necessary to perform the detailed operational execution. Only through the creation of a positive pattern from project to portfolio management is it possible to link strategy and project and improve the general performance.

Indeed, many authors [13] have supported the same assumption, stating repeatedly that simultaneous formalization of single projects, as well as of entrepreneur portfolio projects, is the only way to increases the positive effect on performance and that mature organizations realizing one domain cannot exist without the others.

Finally, we have embraced the theory of Khoshgoftar and Osman [14], who conclude in their review of maturity models that OPM3 is the better maturity model for improving organizational performance. This theory, combined with the following remarks about OPM3, has convinced us that OPM3 would be the most appropriate maturity model regarding the aim of our paper:

- P3M3 uses a separate five-stage process to evaluate the maturity stage; by contrast, OPM3 approach is continuous and it is considered as a positive point.
- OPM3 model has been subject to the results of feedback from the industry for a long time and it has been modified repeatedly.
- The Project Management Institute enjoys wide popular credibility.
- OPM3 emphasizes determining weak points particularly and the continuous improvement of the related issues.

2.1 The Organizational Project, Program, Portfolio Management Maturity Model (OPM3)

This is a standard published for the first time in 2003 by the Project Management Institute and it is now in its third edition [15]. OPM3 defines organizational PM at the systematic management of projects, programs and portfolios in alignment with the achievement of organizational strategic goals. The main features of OPM3 that are useful for our study are:

- OPM3 is not prescriptive; rather it provides a broad-based set of organizational project management best practices (BP). This standard allows an organization to use it as a basis for study and self-examination and consequently to make its own informed decision regarding potential initiatives for changes [PMI].
- OPM3 is industry independent: it seeks to create a framework within which organizations can re-examine their pursuit of strategic objectives via BPs in OPM3.
- OPM3 offers reports as [16] a continuum of BPs, but also as stages of improvement.
- OPM3 does not allow partial fulfilment of any BP.

3. Propositions about OPM3

In order to improve the value of OPM3 as a business-oriented framework, the points of view of users, managers and consultants from the industrial world should be evaluated too. In this direction, Special Interest Groups (SIG) [17] and Websites [18] on the topic have contributed a great deal, enabling authors to feel the pulse of OPM3 users and practitioners.

From a recent survey among OPM3 practitioners [19], more specific motivations for using OPM3 have emerged. Of particular interest to our research are the motivations to:

- Obtain a competitive advantage by recognizing the BPs the organization should strive to attain.
- Discover the best way to perform BPs to achieve overall strategic goals and objectives.
- Determine whether the procedures/processes [the company] follows are actually producing the most effective, efficient and productive results.
- Benchmark results with those of the competition.
- Establish the connection between financial performance and PM maturity.

All of these emphasize the need for linking a maturity assessment and improvement with the company's specific business goals and financial objectives. Indeed, the expected result from OPM3 is concrete support to improve "competitive advantage" in an "effective, efficient and productive" way.

Based on the results of this investigation from the academic to the industrial world, we have formulated our propositions to improve the value of OPM3 as a business-oriented framework.

Proposition 1.a: A contingency approach in using OPM3 should be highly recommended.

Proposition 1.b: OPM3 should include a reference to letting organizations develop their own contingency approach in a very effective and clear way.

Using a contingency approach means recognizing that one size of standardization factors does not fit all organizations. Organizational Project Management standardization factors should be customized to fit the strategic purpose of the company and thus each organization may have its own set, or "size," of best practices (BP) on the OPM3 approach. Many authors [20] agree on the importance of a contingency approach and they insist [21] that it is wrong to assume that BPs will automatically enhance project success.

Indeed, OPM3 does not impede a contingency approach at all. In fact, it is not prescriptive, but it provides guidelines regarding the kinds of things an organization may do in order to achieve excellence in Organizational Project Management. Otherwise, it does not mean with certainty that OPM3 fully supports a contingency approach. In our opinion, to be effective, a contingency approach should be developed through a specific methodology or following definite criteria (for an example, see [22]). Instead, in OPM3 room is also left for subjective evaluations and generic tools in decision-making processes used to choose the potential improvements and select the BPs. Neither a common reference nor specific methodologies to develop an organization's contingency approach exist in OPM3. Results are often, therefore, disappointing.

Milosevic and Patanakul [25], however, proved that a "compass" occurs. Based on their exploratory research, they discovered that there is a specific point - which they referred to as the *inflection point* – beyond which further increasing standardization may actually stifle project success. Where this inflection point exactly appears to be company-specific, meaning that it varies from company to company, but many authors [23, 24] agree that various characteristics, such as the size, composition or innovativeness of projects in the portfolio [25], might influence the effectiveness of maturity. Kiskela [20] and Milosevic [21] have linked the optimal degree of maturity to factors such as complexity, uncertainty and risk. In short, there are many factors influencing a contingency approach. The literature as well as the industrial cases now offer the chance to formalize them into a framework to drive organizations in developing their own effective contingency approach. Including and structuring all this knowledge should enhance the OPM3's value for organizations, saving them from a badly tailored approach.

Proposition 2 happens strictly sequentially because it restates the opportunity to enlarge investigation of other factors in OPM3 assessment.

Proposition 2: an OPM3 assessment should provide organizations with a big picture and a thorough knowledge about their maturity.

There are many researches about the opportunity to include other factors in a really effective assessment. Many authors [27, 28] have demonstrated that there is variability between industries: the more established users of project management such as the engineering-based industries demonstrate a higher level of maturity.

Eisenhardt and Tabrizi [29] have observed that the effect of maturity on project performance may be contingent on certain environmental factors (industry, competition, political interference, etc.). Other authors [24] are inclined to consider structural factors (technological capacity, organizational culture, management systems, financial management and employee morale) and contextual factors (social, political and financial). Finally Mullaly [26] identifies external factors (economic, regulatory and market driven) as potential influences on the maturity level.

All this evidence is consistent with the main idea that assessing the maturity level only through OPM3 assessment is not adequate; organizations should look for a more structured scorecard. Maturity level provided by OPM3 is a solid measure because it allows a standard measurement, monitoring and comparing. Otherwise, the meaning is strongly influenced by organizations' business and strategy.

Our opinion is that more work is needed to see if we can measure more thoroughly the maturity levels and this is possible only through an enlargement of the assessment, even taking in other business-oriented parameters.

Proposition 3: The way of scoring the maturity level in OPM3 is inadequate.

Findings from OPM3 assessment are often disappointing for users and in our opinion the main reason is the method of scoring.

Few researches are focused on the measurement of maturity level: [30] adopts the fuzzy comprehensive evaluation method to evaluate the NPD PM maturity. [31] presents an approach to apply OPM3 to effectively assess organizational project management capability, based on a neural network assessment model. Up to now results from the literature have not been able to remove the weakness of OPM3 scoring method.

There are two different methods of scoring that can be used to represent the maturity state of a company within the OPM3 literature [32]. The first one is based on the percentage of Best Practices, Capabilities and Capability Outcomes which have been fully achieved, relative to the number that was assessed. An alternative scoring provides a more quantitative assessment of maturity by measuring the extent to which Capabilities are present in the organization. Results from the first scoring represent the maturity level, that is, the degree to which the OPM3 methodology is implemented, which is comparable across all organizations. It is very general and at times it may be seen as too strict. The second scoring, based on Capabilities, gives a more detailed picture of the ability of an organization to "do right things well" [33], but it depends on the organization's own strategy and environment. Any two organizations could even have the same level of maturity against completely different capabilities, because the methodology allows them to self-determine goals for process capability. In our opinion, this makes the scoring too subjective, making a comparison among organizations difficult and not completely meaningful. In the same way, what feedback could be given for two similar organizations with different capabilities and different competitive advantage? It comes from capabilities or from the specific goals? OPM3 definitely links value decision making with value delivery and fulfilment, but the scoring does not allow for highlighting that connection in a useful way. Removing this weakness should greatly increase the value for organizations.

4. Discussion and future research work

All our propositions aim at the target from different directions: the point at issue is that OPM3 is too focused on best practices and capabilities. It is an excellent standard, but it almost appears to consider an organization as just the sum of BPs and capabilities. Ann organization is really a more complex system and other factors and their influence should not be ignored.

On the basis of our propositions we intend to develop future research work. The specific aim is to study all the factors (environmental, internal, external, etc.) influencing the organizational Project Management maturity level.

The conceptual research model investigates three areas of decision-making, capabilities and performance evaluation, and it aims at highlighting how environmental, cultural, organizational as well as other factors are able to activate synapsis among any areas.

The research work is expected to increase the value of PMMM in a double way:

- Moving from a subjective perspective to an objective one creates trust in the model, as results could be used to prove the ability of an organization to deliver. That would be a competitive advantage for groups that are selling services, e.g., consulting companies.
- Linking the results of the different domains (project, program and portfolio) into a holistic framework would help organizations understand the correlations among them. Currently, the scores are very much standing alone and the ability of the assessors to create strategic connections is the only way to read the results.

5. Research methodology

The research methodology is based on observation of repeated OPM3 analysis and deep study of the model. It appears quite obvious from analysing the model that the same results can be achieved with completely different starting points.

In order to achieve our specific goal, we intend to use a multi-method approach:

- Descriptive: a survey using questionnaires or interviews will be used for data collection; through case studies, specific characteristics will be analysed in depth; additionally, existing records will be used to collect data.
- Correlational: results from data collection will be evaluated and interpreted through statistical tests for comparisons and to demonstrate relationships.
- Review: through an extensive literature review, the opportunity to integrate OPM3 with a framework for business analysis as a balanced scorecard and a set of methods for benchmarking will be evaluated.

The practical implications of our research should be to increase the value of OPM3 as a business-oriented methodology. Another expected result is to enable and improve the benchmark among organizations.

6. Conclusions

Our aim has been to investigate OPM3 in order to evolve it as a business-oriented model that meets organizations' demands.

The main findings of our position paper are:

- PMMMs are useful to improve the organizations' performance.
- OPM3 is the most complete and effective PMMM.
- OPM3 is too BP-centred, but other factors are important to drive organizations to an appropriately tailored maturity level.
- A review of the assessment and scoring method is needed.

The expected results from research based on this paper are a thorough knowledge of factors influencing organizational PM maturity in order to develop an effective contingency approach to OPM3 and to link PM maturity and business performance.

The limitation could be that we do not release the model from a very strong influence of the assessor. That is key to the result. The quality of the assessor determines the quality of the outcome

7. References

[1] PwC Global Project Management Survey (2012) Organizational Success through Program and Project Management.

[2] Project Management Institute (2013) PMI's Pulse of the Profession - The High Cost of Low Performance. Project Management Institute, Inc, Newtown Square, Pennsylvania. Available: http://www.pmi.org/~/media/PDF/Business-Solutions/PMI-Pulse%20Report-2013Mar4.ashx. Accessed 2013 Apr. 23.

[3] Grant K.P, Pennypacker J.S (2006) Project Management Maturity: An Assessment of Project Management Capabilities Among and Between Selected Industries. IEEE Transactions on Engineering Management, 53 (1): 59-68.

[4] Andersen E.S (2002) Describing and assessing projects: The X model. Paper presented at the PMI Research Conference 2002, Seattle, WA.

[5] Brookes N, Clark R (2009) Using Maturity Models to Improve Project Management Practice. In POMS 20th Annual Conference, Orlando.

[6] Jugdev K, Thomas J (2002) Project management maturity models: The silver bullets of competitive advantage?. Project Management Journal, 33 (4): 4-14.

[7] Crawford JK (2006) The Project Management Maturity Model. Information Systems Management, 23 (4): 50-58.

[8] Tiku S, Azarian M, Pecht M (2007) Using a reliability capability maturity model to benchmark electronics companies. International Journal of Quality & Reliability Management, 24(5): 547 - 563.

[9] Judgev K, Thomas J (2002) Project management maturity models: The silver bullets of competitive advantage. Project Management Journal, 33(4): 4-14.

[10] Ligtvoet A, Van der Lei T.E, Herder P.M (2010) Leren van andere organisaties (Learning from other organizations). Delft: Delft University of Technology. Available: http://www.nextgenerationinfrastructures.eu/download.php?field=document&itemID=590099. Accessed 2013 Jul. 29.

[11] Marshall S (2010) A Quality Framework for Continuous Improvement of e-Learning: The e-Learning Maturity Model. The journal of distance education, 24 (1): 143 – 166.

[12] Man T (2007) A framework for the comparison of Maturity Models for Project-based Management. Thesis number: INF/SCR-07-07, Utrecht University. Available: http://www.pmwiki.nl/sites/pmwiki.nl/files/Thesis_Tjman_2007.pdf. Accessed 2013 Jul. 29.

[13] Teller J, Unger B.N, Kock A, Gemünden H.G (2012) Formalization of project portfolio management: The moderating role of project portfolio complexity. International Journal of Project Management, 30(5): 596–607.

[14] Khoshgoftar M, Osman O (2009) Comparison of maturity models. ICCSIT 2009, 2nd IEEE International Conference on Computer Science and Information Technology.

[15] Project Management Institute (2013) Organizational project management maturity model: OPM3 knowledge foundation, 3th Ed., Project Management Institute, Inc, Newtown Square, Pennsylvania.

[16] Bourne L (2012) Stakeholder Relationship Management: A Maturity Model for Organisational Implementation. Gower Publishing, Ltd. ISBN: 1409458598, 9781409458593.

[17] http://www.linkedin.com/groups/OPM3-Special-Interest-Group-SIG-1312167/about. Accessed 2013 Apr. 23.

[18] http://www.opmexperts.com/. Accessed 2013 Apr. 23.

[19] http://www.projectmanagement.com/articles/251907/OPM3-Survey-Says- Accessed 2013 Apr. 23.

[20] Koskela L, Howell G (2008) The Underlying Theory of Project Management Is Obsolete. Engineering Management Review, 36 (2): 22-34.

[21] Milosevic D, Srivannaboon S (2006) A two-way influence between business strategy and project management. International Journal of Project Management, 24: 493-505.

[22] D'Amico S, Giustiniano L, Nenni ME, Pirolo L (2013) Product lifecycle management as a tool to create value in the fashion system. International Journal of Engineering Business Management, 5.

[23] Dietrich P, Lehtonen P (2005) Successful management of strategic intentions through multiple projects – Reflections from empirical study. International Journal of Project Management, 23: 386-391.

[24] Donaldson L (2001) The Contingency Theory of Organizations, Thousand Oaks, London, New Delhi, Sage.

[25] Björk J, Boccardelli P, Magnusson M, (2010) Ideation Capabilities for Continuous Innovation. Creativity and Innovation Management, 19(4): 385 - 396.

[26] Milosevic D, Patanakul P (2005) Standardised project management may increase development projects success. International Journal of Project Management, 23: 181-192.

[27] Cooke-Davies T, Arzymanow, A (2003) The maturity of project management in different industries: An investigation into variations between project

management models, International Journal of Project Management, 21: 471-478.
[28] Mullaly M (2006) Longitudinal Analysis of Project Management Maturity. Project Management Journal. 36 (3): 62-73.
[29] Eisenhardt K.M, Tabrizi B.N (1995) Accelerating adaptive processes: product innovation in the global computer industry. Administrative science quarterly, 40: 84-110.
[30] Ma Y, Chang Y, Zhu H, Xia C, Chang Z (2011) Research on Maturity Model of Enterprise NPD Project Management. Advances in education and management: International symposium, ISAEBD 2011, Dalian, China.
[31] Bai S, Li S, Feng R, Guo Y (2011) Organizational Project Selection Based on Fuzzy Multi-Index Evaluation and BP Neural Network. The 5th international conference on management and service science.
[32] Rao R (2005) Implementing OPM3®-The challenges and next steps, in Implementing organizational project management maturity model PMI Global Congress 2005--North America. Proceedings.
[33] Schlichter J (2010) The Tools of OPM3: Online versus ProductSuite. Available: http://www.gantthead.com/content/articles/252063.cfm. Accessed 2013 Jul. 29.